The general theory: a desert island economic allegory

Stephen Stretton
21st March 2011

This short allegory attempts to understand a simple economy and, in particular, how investment, inflation, growth are affected by banditry, taxation, the existence of money, and the financial sector. The main schools of economics (classical, Keynesian, Austrian, and Georgist) can, I argue, be considered part of a general economic theory, that is surprisingly simple to explain and understand. This story may be relevant to anyone interested in how the economy works – and how the economy can potentially work better, giving our society greater real wealth and more freedom.

The Desert Island Economy

Consider a desert island with some farmland, a small wood, and two men: a farmer and a toolmaker. The farmer (Adam) spends all his available time farming. He tills the soil with the tools he has, and, as they wear out, he replaces them, by trading with the toolmaker. He produce a range of foodstuffs including growing apples in his orchard (to simplify we will refer only to apples as the primary unit of food). The toolmaker (Fred) harvests his wood sustainably to manufacture a steady supply of wooden tools, and then trades with the farmer to obtain food. Both have enough food to survive, but there is no surplus to invest.

Now consider there is a year with exceptional productivity. The farmer grows more food than is needed on the island, and so he stores some of it for next year. The following year, the farmer needs to grow less food, so he invests his surplus time planting apple trees along each of his hedges. Apple trees need little input of labour in order to produce food in the future, although they do take time to nurture. The apple tree costs resources equivalent to 100 apples, and produces 5 apples per year. It produces a return of 5% per year.

The trees in the wood have also grown rapidly and therefore the toolmaker has surplus wood. Because he has more wood than he needs, he spends some time (equivalent to the cost of manufacturing 100 tools) building a tool-making machine. The tool-making machine produces by itself 5 tools per year without further resources or depreciation – it produces a return of 5% per year.

Storing apples and wood can be done without cost, but of course this provides zero return (0% per year). Given this, individuals start to invest their spare resources in apple trees and tool-making machines, and next year, they have further time and resources to invest. Economic growth has begun.

Bandits

Now a bandit arrives. The bandit offers shares in his banditry company, 'Bandit-Co' to the public. Bandit-Co offers to give a certain return on investment. For the investment of one hundred tools, the banditry company offers to steal some tools each year and will give to its investors10 tools per year to the investor; or for the donation of one hundred apples, will steal and give 10 apples per year to an investor. In short, he offers a return of 10% on investment. Pretty soon, instead of investing in a tool making machine, the tool maker invests 100 tools in the bandit's shares; and the farmer, instead of planting an apple tree, invests 100 apples in the bandit's shares. Both the farmer and the toolmaker are initially happy with their investment, which makes twice as much as their investment in a apple tree or a toolmaking machine. However, over the course of the year, they are disturbed to find that 10 of their tools and 10 of their apples have gone missing. On the other hand, they reason, at least they have enough to eat. If the farmer had invested in apple trees, he would, he reasons, have been 5 apples down from a full diet. And the toolmaker thinks the same.

Meanwhile the bandit is happy with having received the entire surplus of the society for the year in exchange for little work and a few hours spent plundering. What does he do with his winnings? He might (a) consume them immediately, or (b) store the surplus (with a rate of return of 0%), (c) invest in apple trees and tool-making machines (offering a return of 5%) or (d) invest it in a similar company, 'Loot-Co' (offering a rate of return of 10%) which has opened for business next door.... The most likely choices are a combination of (a) consuming (because he is hungry and likes to satisfy his desires), (b) because he likes to have 'liquid assets' or (d) because it offers the highest return of all the investment options. Economic growth stops and looting and banditry take over.

After a while the farmer and toolmaker realise that the Bandit-Co and Loot-Co are not doing society any good, and the farmer and toolmaker expel Bandit-Co and Loot-Co from the island. Economic growth resumes, and all is happy for a while. The surplus of production over consumption reaches 10% and the farmer and toolmaker invest this surplus, making a return of 5%. Economic output expands at 0.5% per year.

Gold

They also make contact with a second identical island, which turns out to be easy to get to, with zero transport costs. This includes Farmer Ben, a second farmer (we will call the first Farmer, Farmer Adam from now on). Farmer Ben has exactly the same number of apple trees as Farmer Adam. (They also make contact with Toolmaker Geoff on the other island, identical in wealth and productivity to Toolmaker Fred.)

In the year 1000, the accumulated wealth of 400 apple trees and 400 tool-making machines (equivalent in value to 40,000 apples and 40,000 tools). The combined output of the two islands reached 2000 apples per year and 2000 tools per year; and total trade had risen to 1000 apples per year and 1000 tools per year (trade between the islands has not yet started: half of this trade was between Adam and Fred; the other half between Ben and Geoff).

Then there was an exciting event on the islands. Adam, Ben, Geoff and Fred each found 500 gold coins. Gold coins can't be eaten, but they looked shiny and so they were ideal for exchange[1]. Since the tools were finished and the apples harvested at different times in the year, the citizens used gold as a store of value and a unit of exchange. The toolmaker bought food using his stock of gold, and later sold tools, receiving the same quantity of gold back in return. In general, each coin was spent about twice per year, and the price of an apple and of a tool was approximately one coin in each case.

The total exchange value of the gold coins in the economy was 1000 apples and 1000 tools. This was 100% of the production of the economy, and about 5% of the total stock of capital goods (wealth). Total wealth (of the virtual and physical varieties) was now 20,000 apples, 20,000 tools and 2000 gold coins, or, in the 'physical numeraire' 21,000 apples and 21,000 tools. The values of the coins tended to rise in value with the growth of the economy, so that the next year, a gold coin would buy 0.5% more apples (1005 apples per 1000 coin or 2005 tools per 1000 coin).

Inflation and Recessions

People noticed that they could also use gold coins as a store of value over longer time periods, which would be useful if their individual crops failed. People no longer kept apples and tools in storage, because money promised a larger return - 0.5% relative to 0% - (although not as large as apple trees and tool making machines). The price of apples and tools fell, compared to the price of money, and money made a greater return than expected. The price of apple *trees* and tool making *machines* also declined relative to that of gold coin. Gold coins made an unexpected return above the expected 0.5%, which encouraged the interest of investors.

Sometimes, investors thought that the return might even top the 5% expected on apple trees. One year, instead of investing his 10 surplus apples in apple trees, as was the norm, Farmer Ben, decided to sell them to the first island for gold coin. When he did, the first islanders found that there were too many apples to go round. The price of apples dropped relative to that of gold coin. The price of apple trees also dropped relative to gold coin. Farmer Adam did buy the surplus apples but stored them instead. Nobody was sure whether apple trees were a good investment. Marginal producers of apples and of tools stopped producing.

Similarly, Geoff sold his surplus tools to the first island. The price of tools dropped relative to money. Tool machines similarly dropped in price. Nobody was sure whether tool machines were a good investment.

Island two then felt much more rich. It had more gold than island one but fewer apple trees and tool-making machines. Because of the general surplus of apples and tools, occasioned by the shift of preferences from apple trees and tool making machines into gold, gold had made an unexpected return relative to physical goods. Owners of gold were able to take advantage of the recession in island one by buying up apple trees and tool making machines at reduced rates. Island one ended up with owning as many apple trees and tool making machines but with more still gold than island one. On the whole, the society invested less, and was less rich, with gold than before it arrived on the scene.

On the other hand, when people shift from desiring gold to desiring apples and apple trees and tools and tool machines? In this case, demand for those goods increases, up to the capacity of the economy. Once, however, we have reached the capacity of the economy, further shifts will simply reduce the price of gold relative to apples or tools (in other words, we will have inflation).

What is the difference between gold on one side and apples and tools on the other? It is that apple and tools are flexible in supply, and gold is not. Whereas supply can respond to shifting portfolio preferences between apples and tools, such

1 There's another story too, involving a government requiring tokens as taxation which the government itself issues, but we we will deal with money as gold here. See P. Arestis and M. C Sawyer, *A handbook of alternative monetary economics* (Edward Elgar Publishing, 2006).

that full employment is maintained, the supply of gold cannot really respond to shifting preferences towards it. It is a good in fixed supply, so that changing portfolio preferences lead to recessions rather than to shifting patterns of demand.

Discussion

We have argued[2]:

1. that the existence of money leads (all other things equal) to a smaller stock of real assets (capital goods and inventories) in equilibrium because money (as 'virtual wealth) it is an alternative store of value to 'real wealth' (capital assets);
2. that the rate of return on money cuts off investment opportunities that would be acceptable;
3. that money can cause recessions because it is totally inelastic supply, so that when portfolio preferences shift towards it, supply will not respond (unlike shifts in portfolio preferences between physical goods).

Exactly the same arguments will hold for other goods fixed in supply with little carrying cost, such as land[3]. It is also easy to see that the problems with gold hoarding outlined here become even worse when lending and borrowing come into the picture, especially with fractional reserve banking, and even more especially with fractional reserve banking without any liquidity reserve. Various economic actors can be alleged to play the role of the 'bandit' above including monopolists, drug suppliers, and the state itself.

The solution to these dilemmas is simple. We should try to reduce the rate of return on all unproductive activities including money hoarding, land ownership, drug supply (including processed food) and other addictive behaviour, ownership of monopoly rights and brands etc. Instead we need to enable investment opportunities that produce things that benefit society. Then the real need of individuals to store their accumulated labour will then manifest itself in real wealth rather than illusory financial assets and an endless 'rat race'.

2 See J. M Keynes, *The general theory of employment, interest and money* (Atlantic Publishers & Distributors, 2006), http://ebooks.adelaide.edu.au/k/keynes/john_maynard/k44g/.

3 Ibid.; H. George, *Progress and poverty* (Cosimo Inc, 2005), http://library.isb.edu/digital_collection/Progress_and_Poverty.pdf; S. Gesell and P. Pye, *The natural economic order* (Peter Owen, 1958).